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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003900725 for a patent by YARRA RIDGE PTY LTD as filed on 19 February 2003.



WITNESS my hand this
Twenty-first day of August 2003

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Field of the Invention

This invention relates to locks for displaceable wings.

5 Summary of the Invention

This specification describes LOCKS (as defined below) substantially as described herein with reference to and as illustrated in the accompanying drawings.

Throughout this specification and claims which follow, unless the context requires otherwise, the word "comprise", or variations such as "comprises" or
10 "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

Throughout this specification and claims which follow, unless the context requires otherwise, the positional prepositions such as rear, forward are used to assist in description of the preferred embodiments and with reference to the accompanying
15 drawings and have in general no absolute significance.

Throughout this specification and claims which follow, unless the context requires otherwise, the word wing embraces both displaceable doors and windows.

Throughout this specification and claims which follow, unless the context requires otherwise: **latching** means displacement of the latch-bolt against biasing
20 means by an engageable means in one form comprising a **strike plate** and subsequent displacement of the latch-bolt into an **aperture** of the strike plate under the action of the **biasing means**; **latch-bolt** is an outwardly biased bolt capable of executing latching; **unlatching** means withdrawal of the latch-bolt from engagement with the engageable means; **unlatching lever** is a lever that is hand operable to cause the latch-bolt to
25 become disengaged; **locking means** reconfiguring the lock to restrain it from becoming unlatched; **deadlocking means** means means to reconfigure the lock to restrain the latch-bolt from being displaced from the configuration that it assumes when engaged with the engageable means; **remote-lock** means a locking means disposed from the lock that includes a remote bolt that is operably connected to the lock – usually there is
30 an upper and a lower remote-lock situated above and below the lock; **"french doors"** means a door comprising a hollow framed with a glass in-fill where the hollow within the frame is comparatively small in depth and **"security doors"** means a door comprising a hollow framed with an in-fill where the hollow within the frame is comparatively small in

depth and width - some security doors having a close weaved infill material; lock-body is the lock portion fitted within the hollow frame of the wing; **depth of lock-body** is the extent of the lock body in a direction parallel to the face of the door; **width of lock-body** is the extent of the lock body in a direction at right-angles to the face of the door; **"free-movement-cylinder"** is a cylinder comprising a key operable barrel within a casing, said barrel being connected to a **"first cam"** (in one form having a radially protruding arm) with free movement, said cylinder preferably comprising a double cylinder sub-assembly of opposed barrels each connected with free movement to the first cam such that the cam is free (between limits) to be angularly displaced while the barrels remain undisplaced.. This type of cylinder having a **"first cam"** that provides free movement is commonly used in security door locks in Australia.

This and the other provisional applications cited in the complete applications associated with this provisional describe inventions comprising improved complete locks for displaceable wings and improvements for locks for displaceable wings, [for convenience referred to herein as **"LOCKS"**] – these improvements being transportable into other locks and locking devices without being limited to application to the complete locks described herein.

It is intended that each of the inventions described herein be the subject of an independent claim of a complete specification and in some cases, the subject of a divisional patent application.

It is also intended that the inventions defined herein be refined and further developed to achieve improved functionality, to achieve products more suitable for manufacturing, to address any shortcomings discovered in the development process, and for any other reason thought desirable.

The **LOCKS** described herein address a number of problems and deficiencies in commonly available locks for hinged and sliding doors, (as well as describing other inventive material not directed at overcoming the deficiencies described below).

The deficiencies that are addressed include:

'1) Commonly used mortice locks particularly those employed in french doors require the interior cylinder to be operated to prevent entry from the exterior whereas it would be more convenient to have an interior hand operable entry-barring lever by which to reconfigure the lock to prevent people from entering from the exterior by unlatching the lock while still enabling the interior lever to be operated to unlatch the lock to permit

exit, – for convenience herewithin we will refer to a lock in this configuration as “entry-barred.”

‘2) Locks commonly used in hollow-framed doors (particularly french doors) employ a double profile cylinder having a clutch and require the key to be rotated 360 degrees for locking and unlocking – this being difficult because of the proximity of the key to the edge of the door

‘3) Locks commonly used hollow-framed doors (including french doors) when locked have to be unlocked by key to enable the lock to be unlatched from the interior – it would be much more convenient and safer (fire consideration reasons) for these doors and security doors to have the locks operable from the interior to unlatch even though the lock remained entry-barred and as is the case for some key-in-knob locksets of “hotel function”

‘4) This specification additionally describes a lock that is adaptable so that the exterior and interior handles can be operated as one.

‘5) Locks employing a pivotal bolt similar to that described in [Watts AU 633318 and AU 671618] and designed to resist displacement of the lock away from the strike plate by jemmying although achieving the main objective, have a deficiency in that they requires careful fitting since substantial misalignment between the bolt and strike plate cannot be accommodated.

‘6) The multipoint lock within [Watts AU 633318] has a deficiency in that it cannot be adapted readily to operate mortice type remote-locks that are supported within the wing frame.

‘7) To be suitable for hollow-framed-doors, such as french doors, the lock-body must have a small depth and to be suitable also for hollow-framed-doors such as security doors, the lock must also have a small width. These requirements define small lock-bodies that must include many functional parts and it should be noted that the lack of space in such small lock-bodies precludes many known lock mechanisms from being employed. One cannot just reduce the size of parts to fit within the space because a reduction in size is often accompanied by a reduction in strength that is unacceptable.

‘8) Locks commonly employed in hollow-framed-doors such as security and french doors employ interior and exterior furniture comprising a handle or knob supported within a back plate and spring biased towards an “undisplaced” configuration – (usually horizontal). For fitting, cost and manufacturing reasons, it is advantageous for each lever to be free within the backplate and obtain its biasing from the lock-body via a shaft

connected to the lock-body. Although this feature is achieved in known large lock-body locks through the employment of a rectilinearly displaceable slide, it is not common in locks for hollow-framed-doors.

5 '9) Locks commonly employed in hollow-framed-doors require the levers to be turned in one direction and this is often an undesirable limitation - (this certainly true for doors sold through retail outlets). An exception to this is the lock [Watts AU 696343]

'10) Locks commonly employed in security doors employ an auxiliary bolt to retain a latch-bolt in a partly extended configuration to facilitate latching such as [Watts AU 696343 and AU 690580 and AU633318] – the latch-bolt in these cases having a leading
10 end profiled on both sides to accommodate both left hand and right hand doors. For reasons including ease of fitting, compatibility with the improved bolt subject of this specification, cost and manufacturing reasons, it is advantageous for the function of the auxiliary bolt to be executed by the bolt itself.

15 '11) Locks commonly employed in french doors have both a latch bolt and a deadlocking bolt and for reasons of fitting, cost, manufacture and compatibility with security door lock requirements it is preferable to employ a single deadlocking latch-bolt

'12) Locks commonly employed in security doors have special configured handles and back-plates and for reasons of interchangeability, cost, manufacture and compatibility with french door lock requirements it is preferable to employ
20 handle/backset subassemblies of common configuration where the distance between the handle axis of rotation and cylinder complies with an industry standard.

'13) Locks commonly employed in security doors have a lock body that includes a casing of cast construction and like a hollow open box into which the components are assembled. For reasons of strength, adaptability, and manufacture it is preferable that
25 the casing be constructed from pressed metal sides such as pressed steel or brass and as such comprise opposed sides of pressed sheet metal attached together by metal rivets with a pressed metal face plate attached to one or both sides.

'14) The multipoint lock described in [Watts AU 714565 and AU 714448] for attachment to the lock [Watts AU 633318] referred to above, has a limitation that
30 (although not limited to cable-based transmission means) it is most easily applied to transmission means comprising Bowden cables where the inner cable connected to each lock displaces simultaneously in the same direction. For reasons of costs, available space for the lock-body and certain types of doors it is preferable that the

remote-locks are connected to the centre lock (lock subject of this application) by counter-acting rods.

'15) Locks commonly employed in french doors do not have an interior "locking-snib" by which to deadlock the bolt (or assist in this function) - this requiring unlocking from the exterior by key. In some cases and particularly where the snib operates the remote locking mechanism, it is an advantage to be able to deadlock the bolt while simultaneously actuating the bolts of the remote-locks as does the locking-snib of locks by [Watts AU 706589 and associated divisionals]

'16) Arrising from attempting to achieve the above objective (overcoming shortcomings) a particular difficulty was encountered in deriving lock functionality that included means of disabling the entry-barring means.

According to the invention there is [Invention 1] a lock for a displaceable wing that includes any of the following functionality:

- A pivotal bolt comprising a latch-bolt that is held in a partly extended position prior to latching that on latching extends to the fully extended position and is automatically deadlocked (the complete action being called deadlatching)
- An interior snib-lever and/or key operable free-movement-cylinder that can be operated to a) drive remote-locks, and/or b) deadlock the pivotal latch bolt
- An entry-barring means
- An interior lever that can be operated to cause the bolt to retract after disabling the automatic deadlatching means.
- Where if the entry-barring means is not operative, the exterior lever can be operated to cause the bolt to retract after disabling the automatic deadlatching means.
- Where there is an alternative handle shaft that links the interior and exterior handles together so they operate as one.

According to the invention there is [Invention 2] a bolt for LOCKS, comprising a pivotal bolt having at least one sideways protruding portion that is engageable behind the periperal side wall of a slot within a strike plate, said strike plate having an entry aperture connected to an offset aperture of reduced width wherein a side wall of the offset aperture comprises the engageable peripheral wall, wherein the sideways protruding portion is engageable behind the offset aperture wall over a range of vertical

relative dispositions of the bolt and strike plate to accommodate house movement and poor door fitting. Preferably, the protruding portion comprises an arcular blade.

According to the invention there is **[Invention 3]** a means of actuating an outwardly biased pivotal latch-bolt for LOCKS including an unlatching slide, at least one
5 unlatching cam connected by shaft to an associated hand operable lever, said bolt being supported by a casing and having an opposed return arm disposed on the opposite side of its pivotal axis, wherein the unlatching slide comprises a displaceable plate supported within the casing and having at one end a slide-drive-shoulder and at the other end at least one driven shoulder that is engageable by a driving shoulder of the unlatching cam
10 to cause the unlatching slide to displace towards the bolt to displace a bolt_controlling_slide (coupled to the return arm of the bolt) to cause the bolt to retract (displace) into the casing against bolt biasing means. Preferably the unlatching slide and displaces rectilinearly, preferably the bolt_controlling_slide displaces substantially rectilinearly.

15 Preferably, the return arm supports a sideways protruding bolt pin that lies within a horizontal slot of the bolt_controlling_slide which is biased by a spring towards the unlatching slide so that when the bolt angularly rotates the bolt_controlling_slide simultaneously vertically rectilinearly displaces.

According to the invention there is **[Invention 4]** a means of biasing a hand
20 operable lever or knob for LOCKS having a casing of small depth, said means including a displaceable slide and at least one unlatching cam connected by shaft to an associated lever, said unlatching cam having angled driving shoulders either of which may engage an associated driven shoulder of the slide to cause the said slide to be displaced, said slide being biased towards the unlatching cam by slide biasing means
25 whereby to define and urge the lever towards an undisplaced position, wherein the slide is displaceable in a substantially vertical direction but wherein in some forms this is accompanied by limited angular displacement. Preferably the slide comprises the unlatching slide

According to the invention there is **[Invention 5]** a means of operating LOCKS
30 including a casing of small depth and an a displaceable unlatching slide and at least one unlatching cam that has angled driving shoulders either of which may engage an associated driven shoulder of the unlatching slide to cause the said slide to be displaced whereby to cause the bolt to retract. Preferably, there is an unlatching lever connected by shaft to the unlatching cam. Preferably there is an exterior unlatching cam connected

to an exterior lever by an exterior shaft and preferably there is an interior unlatching cam connected to an interior lever by an interior shaft whereby the bolt can be caused to retract by operation of either lever in either direction. Preferably the unlatching-slide is the slide described in the paragraph immediately above. In an alternative form there is a single shaft interconnecting each lever.

According to the invention there is [Invention 6] a means of operating LOCKS including a casing of small depth, a displaceable outwardly biased latch-bolt and an a displaceable unlatching slide operably associated with the latch-bolt and an exterior unlatching cam connected to an exterior lever by an exterior shaft and an interior unlatching cam connected to an interior lever by an interior shaft, each said unlatching cam having angled driving shoulders either of which may be made (through angular displacement of the unlatching cam caused by rotation of a lever) to engage an associated driven shoulder of the unlatching slide to cause the said slide to be displaced whereby to cause the bolt to retract, said lock including entry-barring means connected to a hand operably interior locking-lever that is operable to render the lock unable to be unlatched by the exterior lever. Preferably, the exterior unlatching cam has a exterior stop recess and the lock-body includes a displaceable stop member that is displaceable to engage within the stop recess whereby to restrain the exterior unlatching-cam against displacement. Preferably the stop member is connected to a hand operable entry-barring lever within the interior door furniture.

According to the invention there is [Invention 7] a deadlatching means for LOCKS having a latch-bolt (both rectilinearly and angularly displaceable) said means comprising the bolt_controlling_slide which at the end disposed towards the unlatching slide is supported by a second pin that is supported within a profiled aperture in the side of the casing while the opposite end is supported by a first pin within a vertical slot, the bolt_controlling_slide having an arm that extends towards the bolt in which there is a slotted recess that is coupled to a sideways protruding bolt pin of the return arm of the latch bolt. The bolt_controlling_slide is biased towards the unlatching slide that supports a pre-latching spring that extends towards the bolt_controlling_slide and which when the slides are adjacent biases the adjacent end of the bolt_controlling_slide rearwardly. The profiled aperture has a substantially horizontal rearwardly extending second extension defined in part by a substantially horizontal pre-latching shoulder. The lock is configured such that after the bolt has fully displaced (and the unlatching slide is in the undisplaced position), the second pin is adjacent second the horizontal extension

and displacement of the bolt towards the retracted position causes the second pin of the bolt_controlling_slide to rock forward about the axis of the first pin – this rocking causing the second pin to displace into the second extension to resist further displacement of the bolt_controlling_slide and the bolt; the bolt thereby being restrained against further inwards displacement.

According to the invention there is [Invention 8] pre-latching means for LOCKS (having both rectilinearly and angularly displaceable bolts) including an outwardly biased latch-bolt, said pre-latching means to restrains the latch-bolt in a partly extended position prior to latching and to facilitate latching, said means comprising the bolt_controlling_slide which at the end disposed away from the unlatching slide is supported by a second pin that is supported within a profiled aperture in the side of the casing while the opposite end is supported by a first pin within a vertical slot, the bolt_controlling_slide having an arm that extends towards the bolt in which there is a slotted recess that is coupled to a sideways protruding bolt pin of the return arm of the latch bolt. The bolt_controlling_slide is biased towards the unlatching slide that supports a pre-latching spring that extends towards the bolt_controlling_slide and which when the slides are adjacent biases the adjacent end of the bolt_controlling_slide rearwardly. The profiled aperture has a substantially horizontal rearwardly extending first extension defined in part by a substantially horizontal pre-latching shoulder. The lock is configured such that after the unlatching slide has been displaced to unlatch the bolt, the pre-latching spring displaces the second pin into the first horizontal extension to be adjacent the pre-latching shoulder; the lock is further configured such that when the second pin engages the pre-latching shoulder the latch-bolt is partly extended.

According to the invention there is [Invention 9] deadlocking means for LOCKS including a latch-bolt supported on a shaft for substantially pivotal movement that is displaceable to a fully extended position where it protrudes from the casing, in which position it is engageable by a deadlocking slide (when the deadlocking slide is in the deadlocking configuration) to retrain the latch-bolt from being displaced from the fully extended position, said deadlocking slide be actuateable by an angularly displaceable first cam having a radially protruding arm [as in Watts AU 706589 and associated divisionals] (in one form comprising part of a free-movement-cylinder) and by an angularly displaceable snib-arm (that in one form is connected to an interior hand operable snib lever by a shaft) said snib arm having a sideways protruding pin that engages in a horizontal slot in the deadlocking slide, said deadlocking slide being

operably connected to the arm of the first cam by a drive recess having an upper drive face on which the cam engages to drive the deadlocking cam towards the deadlocking configuration and having a lower drive face on which the cam engages to drive the deadlocking cam from the deadlocking configuration and an exit shoulder (preferably comprising an angled face) connected to the upper drive face disposed such that when in the deadlocking configuration the first cam can be disposed such that an end face of the cam (a face of constant radius) is adjacent the exit shoulder such that the force that is applied to the first cam by the deadlocking slide when an attempt is made to move the deadlocking slide from the deadlocking configuration (as might occur in an attempt to rotate the snib lever) has a direction that passes through the pivotal axis of the cam and so the cam cannot be so rotated and the first cam in this configuration restrains the deadlocking slide. Preferably the snib-arm is connected to an opposed arm to comprise a rocker member, said opposed arm being connected to a secondary slide that acts counter to the deadlocking slide by a sideways protruding pin of the opposed arm that engages in a horizontal slot in the secondary slide, and wherein the deadlocking slide and secondary slide (preferably being rectilinearly displaceable simultaneously in opposite directions) have end portions adapted to be connected to rods that connect to remote locking means whereby to enable deadlocking slide movement to actuate the remote bolts of the remote locking means (being an upper and/or lower remote-locks). Preferably the deadlocking slide has a sideways protruding pin that is engageable with the free end of the stop-arm such that in the deadlocking configuration the stop is displaced from the stop recess so that each time the deadlocking slide is actuated the stop is disabled. It should be noted that the deadlocking slide can be actuated between operative positions by the snib lever for so long as the first cam arm is between the drive faces. As stated above, preferably displacement of the deadlocking slide to the deadlocking configuration disables the stop whereby to enable the exterior lever to unlatch the lock. Preferably the rocker and deadlatching-rocker are co-axial.

The invention further provides a lock having a bolt supported in the casing between the unlatching cam and the key operable double cylinder.

The invention further provides a lock according to any features described above and where dimension L of Figure 1 is 85.00 mm whereby to render the lock compatible with door furniture of common configuration.

The invention further provides a lock according to the above where the casing is constructed from pressed metal parts such as pressed steel or brass and as such

comprises opposed sides of pressed sheet metal attached together by metal rivets with a pressed metal face plate attached to one or both sides.

The invention further provides a lock according to any features described above and where dimension l_1 is substantially the same as that of common security door locks.

The invention further provides a lock according to any features described above and where $l_2 = l_1/2$

It will be appreciated that a combination of at least any two of the above defined inventions will define a further invention.

The invention further provides LOCKS substantially as described herein with reference to and as illustrated in the accompanying drawings.

Description of the Drawings

Embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a schematic view of the lock body (one side of casing removed) when the bolt is partly extended in a pre-latching configuration.

Figure 2 a is a schematic view of the lock (one side of casing removed) when the bolt is fully extended

Figure 3 a is a schematic view of the lock (one side of casing removed) when the bolt is fully extended when the bolt has been displaced in an attempt to unlatch the lock

Figure 4 is a schematic view of the lock (one side of casing removed) in the locked and deadlocked configuration with upper portion of deadlocking slide not shown

Figure 5 is a schematic view of the lock (one side of casing removed) in the locked and deadlocked configuration with upper portion of deadlocking slide shown

Figure 6 is a schematic view of the lock when the bolt has been caused to become fully retracted by lever operation.

Figure 7 is a schematic view of the lock (one side of casing removed) in the deadlocked (but not locked) configuration with upper portion of deadlocking slide not shown

Description of Preferred Embodiments

This application describes improvements to the invention described in:

Provisional application Improvements in lock – Cont 4

In a form the invention includes a LOCK for a displaceable wing that includes any
5 of the following functionality:

- A pivotal bolt 1 comprising a latch-bolt that is held in a partly extended position as shown in Fig 1 prior to latching that on latching extends to the fully extended position shown in Fig 2 and is automatically deadlocked (the complete action being called deadlatching)
- 10 • An interior snib-lever connected to a snib-locking arm 2 and/or key operable free-movement-cylinder 3 that can be operated to a) drive remote-locks, and/or b) deadlock the pivotal latch bolt
- An entry-barring means 4
- An interior lever that can be operated to cause the bolt to retract after disabling
15 the automatic deadlatching means 5.
- Where if the entry-barring means is not operative, the exterior lever can be operated to cause the bolt to retract after disabling the automatic deadlatching means.
- Where there is an alternative handle shaft that links the interior and exterior
20 handles together so they operate as one.

In a form the invention includes a LOCK for a displaceable wing that includes a pivotal bolt 1 that has at least one sideways protruding portion 6 that is engageable behind the periperal side wall 7 of a slot 8 within a strike plate 9, said strike plate having an entry aperture 10 connected to an offset aperture 11 of reduced width
25 wherein a side wall of the offset aperture comprises the engageable peripheral wall, wherein the sideways protruding portion is engageable behind the offset aperature wall over a range of vertical relative dispositions of the bolt and strike plate to accommodate house movement and poor door fitting. Preferably, the protruding portion comprises an arcular blade as shown in Fig 1. Preferably, the bolt has a leading end profiled on both
30 sides to accommodate both left hand and right hand doors.

In a form the invention includes a LOCK for a displaceable wing that includes means of actuating an outwardly biassed pivotal latch-bolt including an unlatching slide 12, at least one unlatching cam 13 connected by shaft to an associated hand

operable lever, said bolt being supported by a casing 14 and having an opposed return arm 15, Fig 7, disposed on the opposite side of its pivotal axis, wherein the unlatching slide comprises a displaceable plate-like member supported within the casing and having at one end a slide-drive-shoulder 16 and at the other end at least one driven shoulder 17 that is engageable by a driving shoulder 23 of the unlatching cam to cause the unlatching slide to displace towards the bolt to displace a bolt_controlling_slide 18 (coupled to the return arm of the bolt 15) to cause the bolt to retract (displace) into the casing against bolt biasing means derived from the bolt-control-slide towards the unlatching slide. Preferably the unlatching slide is supported by pins 20 that are supported in the slide and have passage in vertical elongated slots of the casing sides to enable the bolt_controlling_slide to displace rectilinearly. Preferably the cam has cylindrical portions that are supported in a circular aperture in a side of the casing.

Preferably, the return arm 15 supports a sideways protruding bolt pin 21 that lies within a horizontal slot 22 of the bolt_controlling_slide which is biased by spring 19 towards the unlatching slide so that when the bolt angularly rotates the bolt_controlling_slide simultaneously displaces.

In a form the invention includes a LOCK for a displaceable wing that includes a means of biasing a hand operable lever or knob, said means including a displaceable slide and at least one unlatching cam 13 connected by shaft to an associated lever, said unlatching cam having angled driving shoulders 23 either of which may engage an associated driven shoulder 17 of the slide to cause the said slide to be displaced, said slide being biased towards the unlatching cam by slide biasing means 24 (preferably comprising a compression spring) whereby to define and urge the lever towards an undisplaced position, wherein the slide is displaceable in a substantially vertical direction but wherein in some forms this is accompanied by limited angular displacement. Preferably the slide comprises the unlatching slide 12

In a form the invention includes a LOCK for a displaceable wing that includes operating means including a displaceable unlatching slide 12 and at least one unlatching cam 13 that has angled driving shoulders 23 either of which may engage an associated driven shoulder 17 of the unlatching slide to cause the said slide to be displaced whereby to cause the bolt to retract. Preferably, there is an unlatching lever connected by shaft to the unlatching cam. Preferably there is an interior unlatching cam connected

to an interior lever by an interior shaft and preferably there is an exterior unlatching cam supported coaxially and adjacent the interior cam and connected to an exterior lever by an exterior shaft whereby the bolt can be caused to retract by operation of either lever in either direction. Preferably the unlatching-slide is the slide described in the paragraph immediately above. In an alternative form there is a single shaft interconnecting each lever.

In a form the invention includes a LOCK for a displaceable wing that includes a operating means including a displaceable outwardly biased latch-bolt and an a displaceable unlatching slide operably associated with the latch-bolt and an exterior unlatching cam connected to an exterior lever by an exterior shaft and an interior unlatching cam connected to an interior lever by an interior shaft, each said unlatching cam having angled driving shoulders either of which may be made (through angular displacement of the unlatching cam caused by rotation of a lever) to engage an associated driven shoulder of the unlatching slide to cause the said slide to be displaced whereby to cause the bolt to retract, said lock including entry-barring means connected to a hand operably interior locking-lever (not shown) that is operable to render the lock unable to be unlatched by the exterior lever. Preferably, the exterior unlatching cam has a exterior stop recess 26 and the lock-body includes a displaceable stop member 27 that is displaceable to engage within the stop recess whereby to restrain the exterior unlatching-cam against displacement. Preferably the stop member is connected to a hand operable entry-barring lever within the interior door furniture (not shown).

In a form the invention includes a LOCK for a displaceable wing that includes a deadlatching means 28 for LOCKS having a latch-bolt, said means comprising the bolt_controlling_slide which at the end disposed towards the unlatching slide is supported by a second pin 30 that is supported within a profiled aperture 31 in the side of the casing while the opposite end is supported by a first pin 32 within a vertical slot 33, the bolt_controlling_slide having an arm 34 that extends towards the bolt in which there is a slotted recess 22 that is coupled to a sideways protruding bolt pin 21 of the return arm of the latch bolt. The bolt_controlling_slide is biased towards the unlatching slide. The profiled aperture has a substantially horizontal rearwardly extending second extension 36 defined in part by a substantially horizontal locking shoulder 37. The lock is configured such that after the bolt has fully displaced (and the

unlatching slide is in the undisplaced position), the second pin is adjacent second the horizontal extension and displacement of the bolt towards the retracted position causes the second pin of the bolt_controlling_slide to rock forward as shown in Fig 3 about the axis of the first pin – this rocking causing the second pin to displace into the second extension to resist further displacement of the bolt_controlling_slide and the bolt; the bolt thereby being restrained against further inwards displacement.

In a form the invention includes a LOCK for a displaceable wing that includes pre-latching means 38 for LOCKS including an outwardly biased latch-bolt, said pre-latching means to restrains the latch-bolt in a partly extended position prior to latching and to facilitate latching, said means comprising the bolt_controlling_slide which at the end disposed away from the unlatching slide is supported by a second pin that is supported within a profiled aperture in the side of the casing while the opposite end is supported by a first pin within a vertical slot, the bolt_controlling_slide having an arm that extends towards the bolt in which there is a slotted recess that is coupled to a sideways protruding bolt pin of the return arm of the latch bolt. The bolt_controlling_slide is biased towards the unlatching slide that supports a pre-latching spring 35 that extends towards the bolt_controlling_slide and which when the slides are adjacent biases the adjacent end of the bolt_controlling_slide rearwardly. The profiled aperture has a substantially horizontal rearwardly extending first extension 38 defined in part by a substantially horizontal pre-latching shoulder 39. The lock is configured such that after the unlatching slide has been displaced to unlatch the bolt, the pre-latching spring displaces the second pin into the first horizontal extension to be adjacent the pre-latching shoulder; the lock is preferably further configured such that when the second pin engages the pre-latching shoulder the latch-bolt is partly extended.

In a form the invention includes a LOCK for a displaceable wing that includes a latch-bolt supported on a shaft for substantially pivotal movement that is displaceable to a fully extended position where it protrudes from the casing, in which position it is engageable by a deadlocking slide 40 (when the deadlocking slide is in the deadlocking configuration) to restrain the latch-bolt from being displaced from the fully extended position, said deadlocking slide be actuateable by an angularly displaceable first cam 41 having a radially protruding arm 41 [as in Watts AU 706589 and associated divisionals] (in one form comprising part of a free-movement-cylinder) and by an angularly displaceable snib-arm 42 (that in one form is connected to an interior hand operable snib lever by a shaft) said snib-arm having a sideways protruding pin 43

that engages in a horizontal slot 44 in the deadlocking slide, said deadlocking slide being operably connected to the arm 41 of the first cam by a drive recess 45 having an upper drive face 46 on which the cam engages to drive the deadlocking cam towards the deadlocking configuration and having a lower drive face 47 on which the cam engages to drive the deadlocking cam from the deadlocking configuration and an exit shoulder 48 (preferably comprising an angled face) connected to the upper drive face disposed such that when in the deadlocking configuration the first cam can be disposed such that an end face of the cam (preferably a face of constant radius) is adjacent the exit shoulder such that the force that is applied to the first cam by the deadlocking slide when an attempt is made to move the deadlocking slide from the deadlocking configuration (as might occur in an attempt to rotate the snib lever) has a direction that passes through the pivotal axis of the cam and so the cam cannot be so rotated and the first cam in this configuration restrains the deadlocking slide. Preferably the snib-arm is connected to an opposed arm 49 to comprise a rocker member 50, said opposed arm being connected to a secondary slide 51 that acts counter to the deadlocking slide by a sideways protruding pin 52 of the opposed arm that engages in a horizontal slot 53 in the secondary slide, and wherein the deadlocking slide and secondary slide (preferably being rectilinearly displaceable simultaneously in opposite directions) have end portions adapted 54 to be connected to rods 55 that connect to remote locking means whereby to enable deadlocking slide movement to actuate the remote bolts of the remote locking means (being an upper and/or lower remote-locks). Preferably the deadlocking slide has a sideways protruding pin 56 that is engageable with the free end of the stop-arm 25 such that in the deadlocking configuration the stop is displaced from the stop recess so that each time the deadlocking slide is actuated the stop is disabled. It should be noted that the deadlocking slide can be actuated between operative positions by the snib lever for so long as the first cam arm is between the drive faces as shown in Fig 7. As stated above, preferably displacement of the deadlocking slide to the deadlocking configuration disables the stop whereby to enable the exterior lever to unlatch the lock. Preferably the rocker and deadlatching-rocker are co-axial.

In a form the invention includes a LOCK for a displaceable wing where the deadlocking slide and secondary slide are supported by pins that are supported in the slides and have passage within vertical elongated slots in the sides of the casing.

In a form the invention includes a LOCK for a displaceable wing that includes a lock having a bolt supported in the casing between the unlatching cam and the key operable double cylinder.

5 In a form the invention includes a LOCK for a displaceable wing according to any features described above and where dimension L of Figure 1 is 85.00 mm whereby to render the lock compatatable with door furniture of common configuration.

10 In a form the invention includes a LOCK for a displaceable wing according to the above where the casing is constructed from pressed metal parts such as pressed steel or brass and as such comprises opposed sides of pressed sheet metal attached together by metal rivets with a pressed metal face plate attached to one or both sides.

In a form the invention includes a LOCK for a displaceable wing according to any features described above and where dimension l_1 is substantially the same as that of common security door locks.

15 In a form the invention includes a LOCK for a displaceable wing according to any features described above and where $l_2 = l_1/2$

In a form the invention includes a LOCK for a displaceable wing substantially as described herein with reference to and as illustrated in the accompanying drawings.

Yarra Ridge P/L

18/2/03

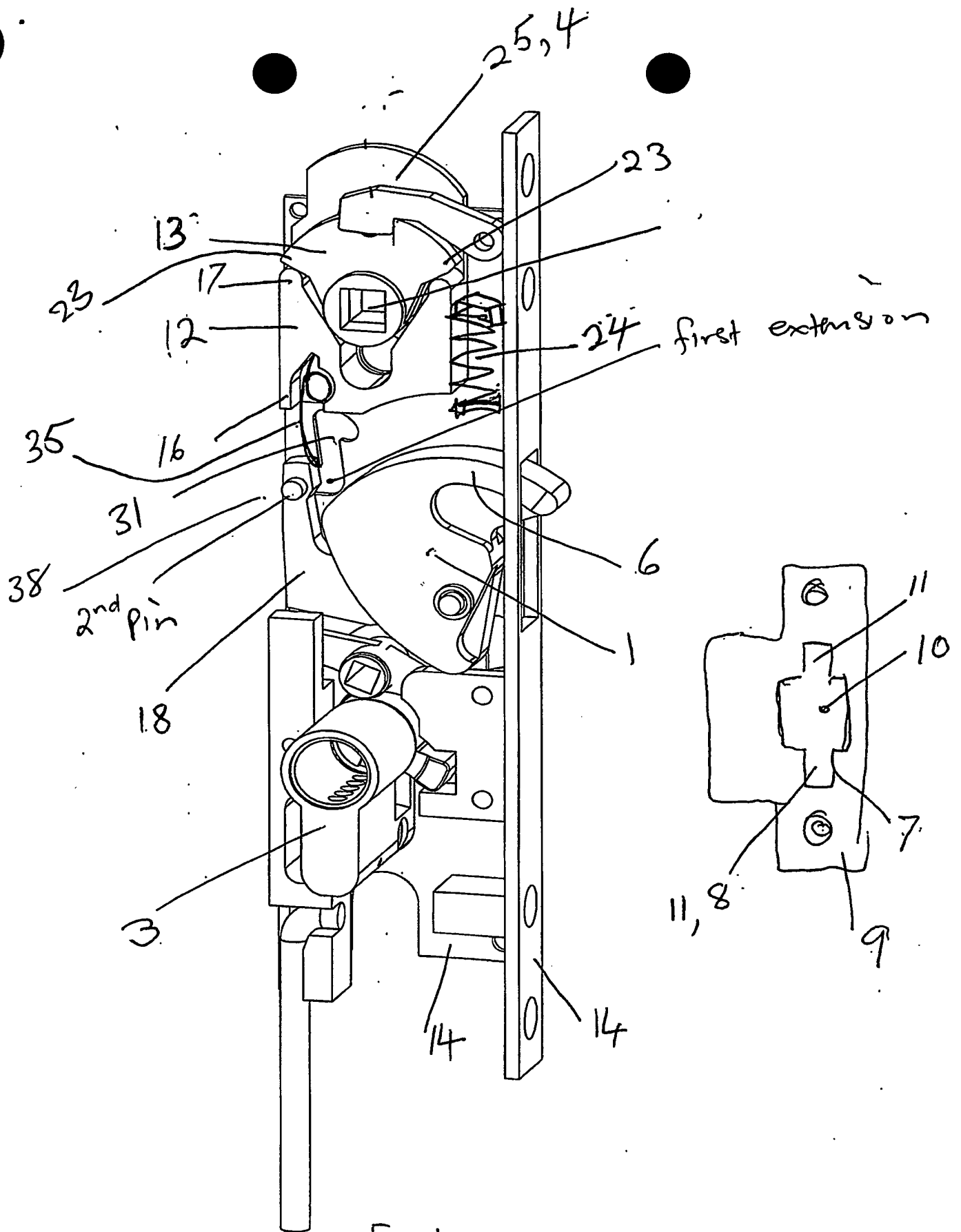


Fig 1

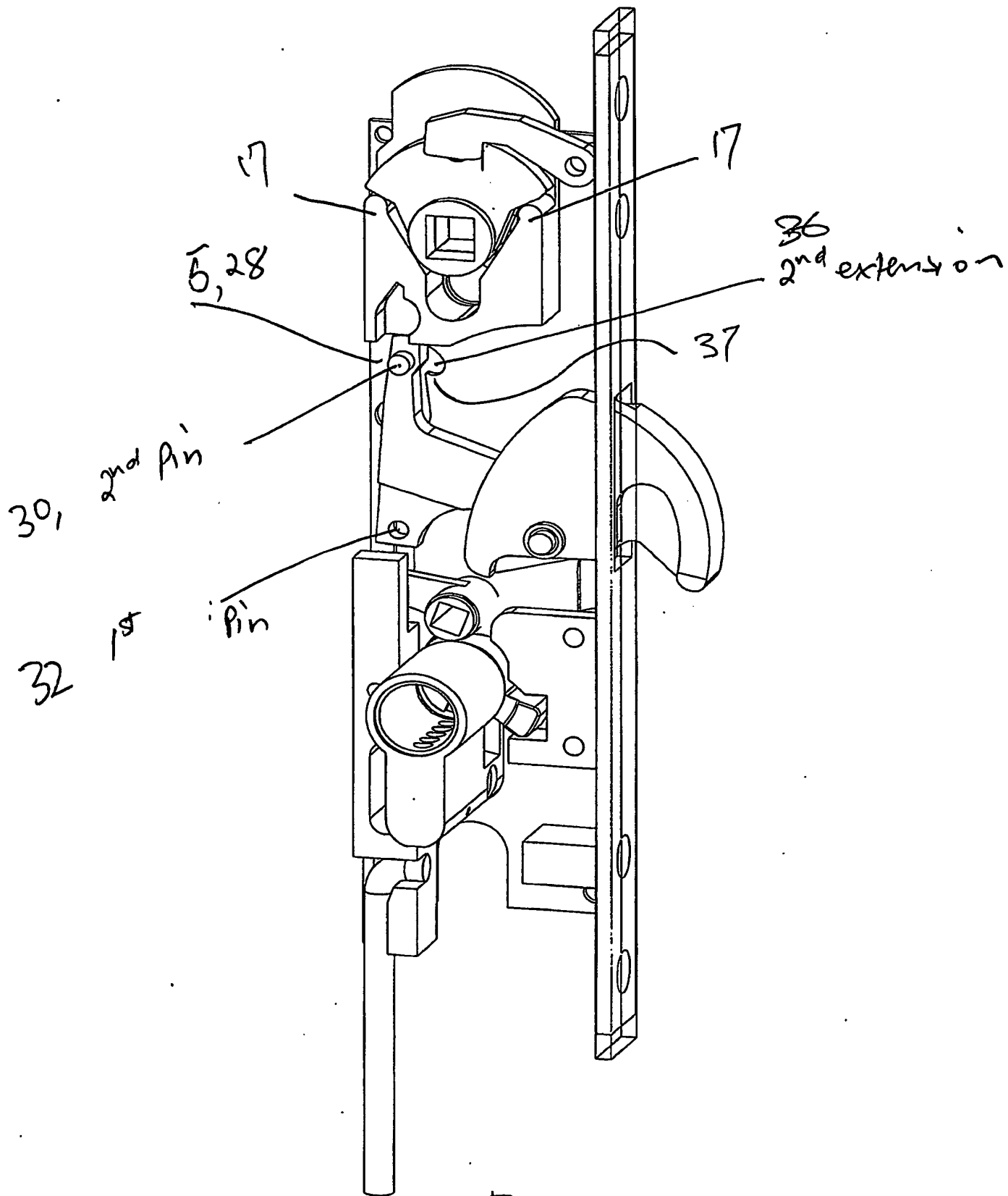


Fig 2

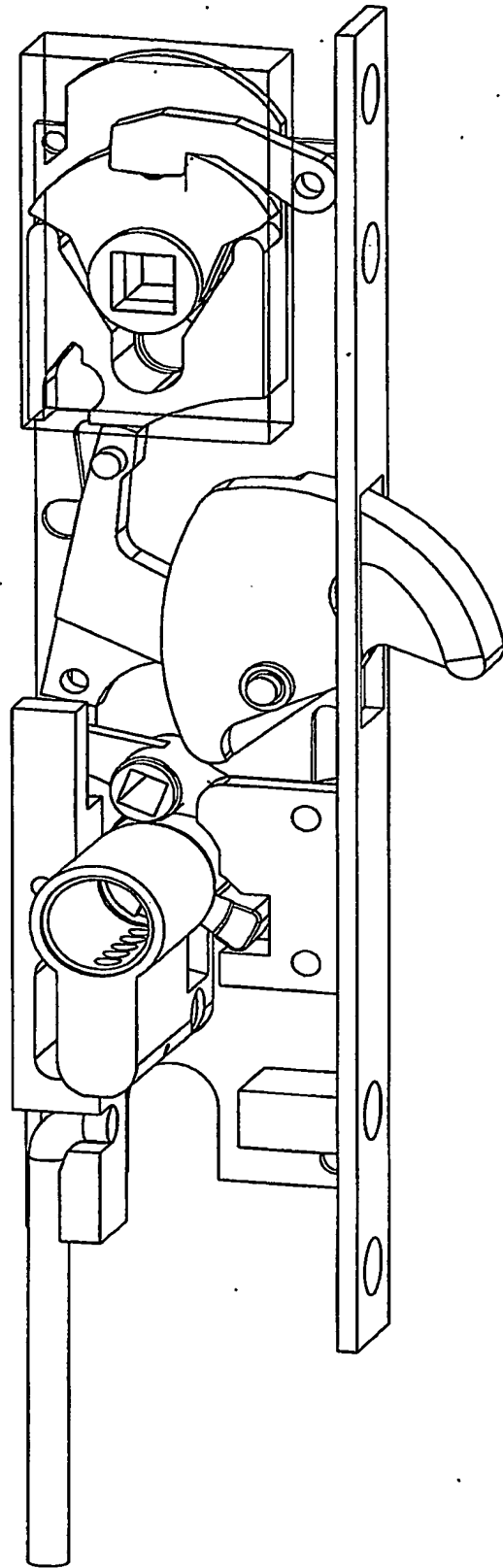


Fig 3

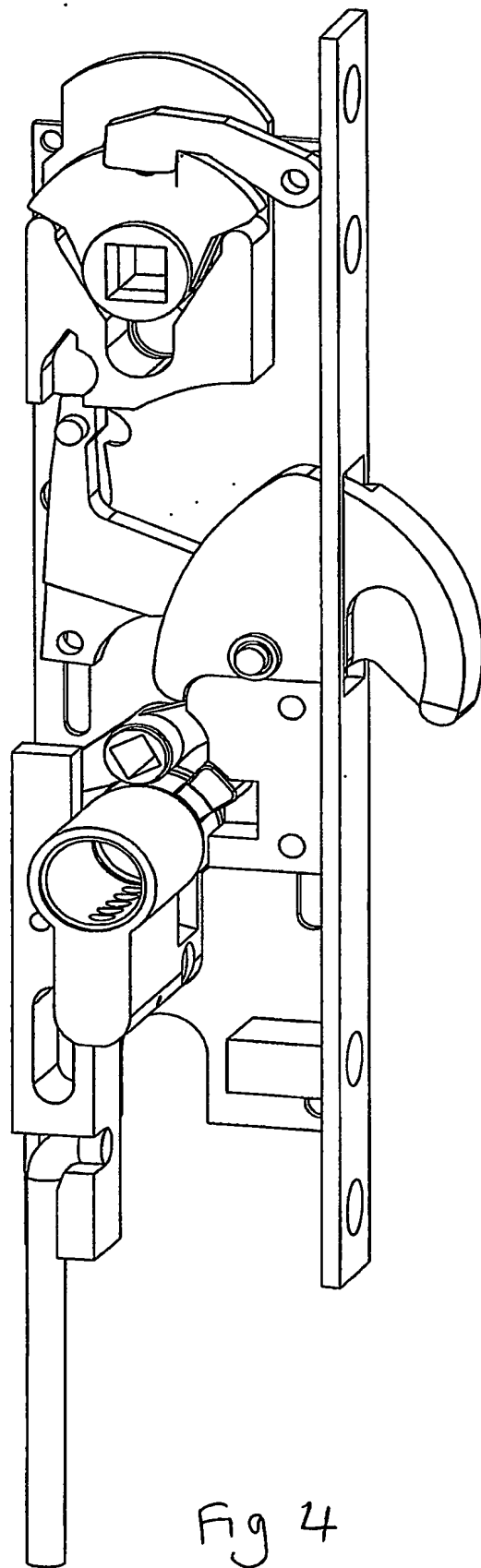


Fig 4

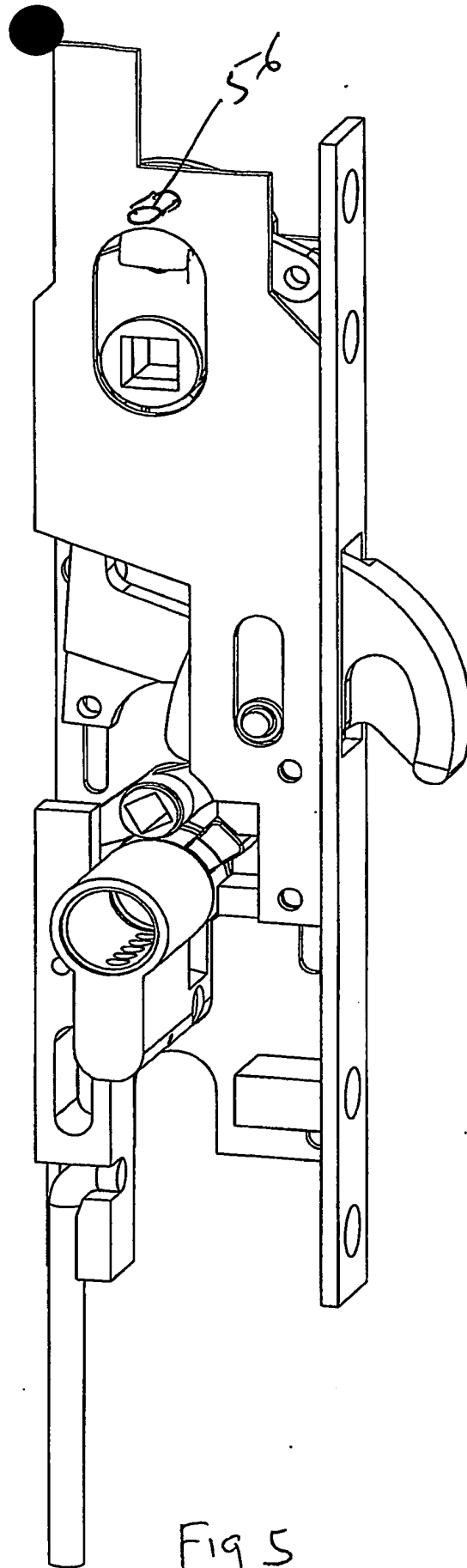


Fig 5

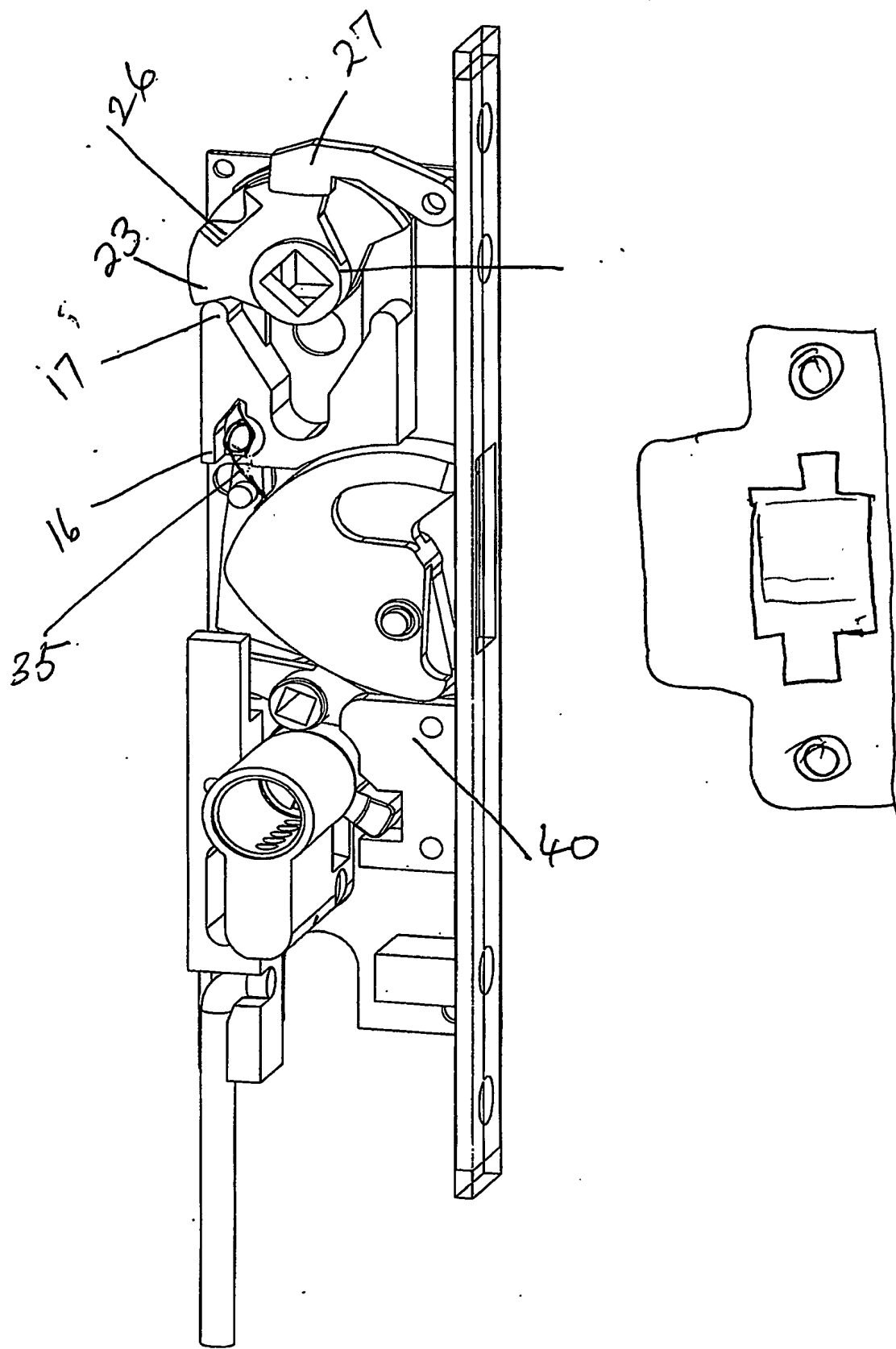
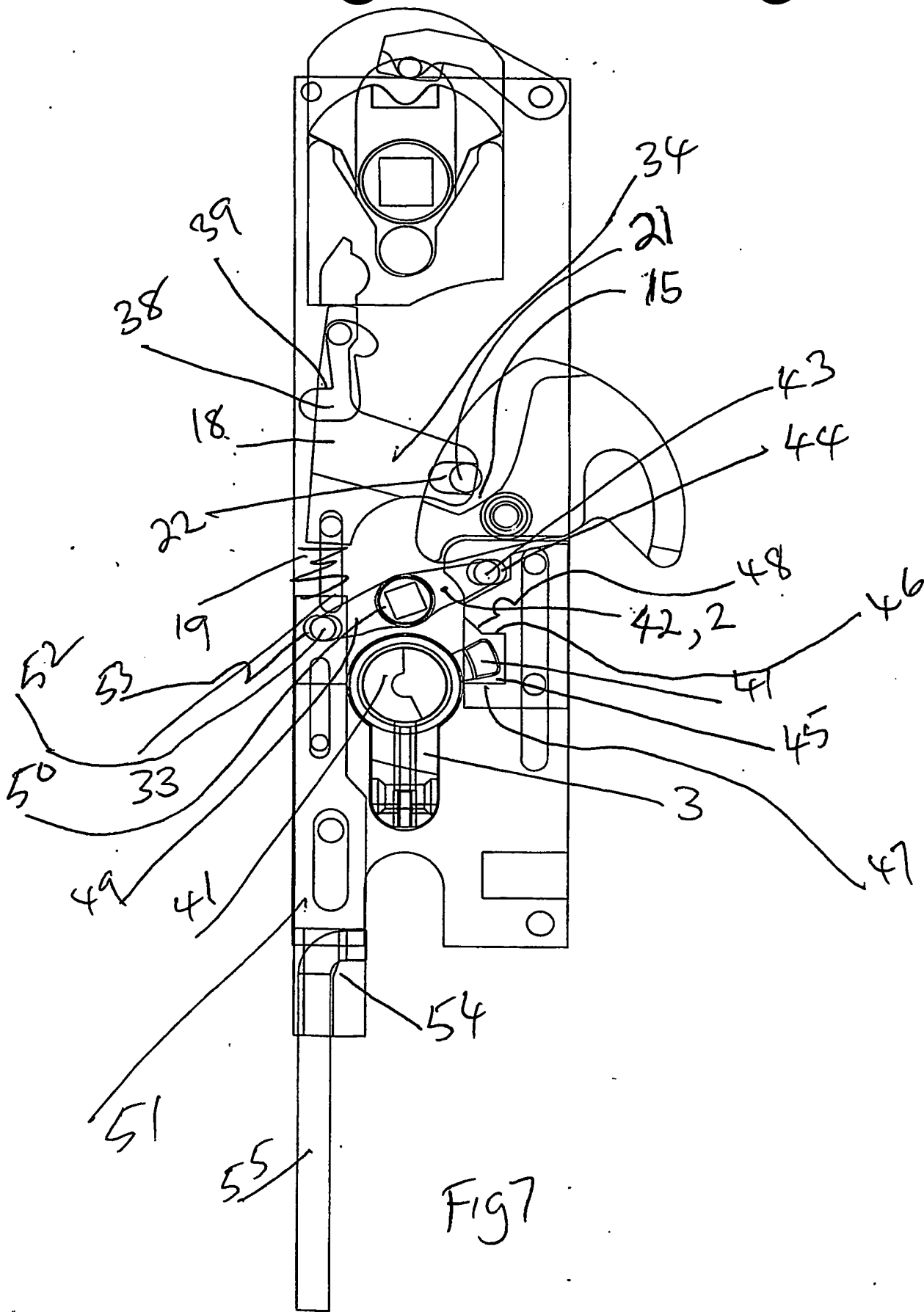


Fig 6



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